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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,454	02/10/2004	Takao Saito	811_106	9153
25191	7590	11/19/2007		
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			EXAMINER TUROCY, DAVID P	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/19/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/774,454	SAITO ET AL.	
	Examiner	Art Unit	
	David Turocy	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/9, 10/22</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendments filed 10/9/2007, have been fully considered and reviewed by the examiner. The examiner notes the amendment to claim 1 and the addition of claim 8. Claims 1-8 remain pending with claims 5-7 withdrawn due to a restriction requirement.

### ***Response to Arguments***

2. All the Applicant's arguments filed 10/9/2007 have been fully considered but they are deemed moot because they are directed to newly added limitations that were not present at the time of the prior rejection. These limitation will be addressed in the prior art rejection that follows.

### ***Terminal Disclaimer***

3. The terminal disclaimer filed on 10/9/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 11/194619 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on 10/22/2007 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. ID filed 10/9/2007 has been crossed

out because it is merely a duplicate of that filed 10/22/2007, without the indication of English translation of reference A7.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-12735 by Yara et al, hereinafter Yara.

Claim 1: Yara discloses a method of producing a thin film using opposing electrodes by applying a pulse voltage to opposing electrodes under a pressure within the claimed range and under an atmosphere comprising a gaseous raw material including a carbon source to generate discharge plasma so that a thin film is formed on a substrate. (see for example abstract, paragraphs 0008-0013, figures). The pulse has a duration 1000 nanoseconds (0011). A *prima facie* case of obviousness exists where the claimed ranges and prior art do not overlap but are close enough that one in ordinary skill in the art would have expected them to have the same properties.

*Titanium Metals Corp. of America v. Banner*, 778 f.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05. Specifically, one of ordinary skill in the art would deem 1000 nanoseconds to have similar properties to that with a 999 nanosecond pulse duration.

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Claim 2. The pulse voltage of Yara has a pulse rise time of 1000 nsec or shorter (0010).

Claim 3. The pulse voltage of Yara has a pulse fall time of 1000 nsec or shorter (0010).

Claim 4: The film deposited by Yara is diamond like carbon (0013).

7. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-12735 by Yara et al, hereinafter Yara and further in view of "Characterization of Ultra-Short pulsed Discharge Plasma for CVD processing" by Mizuno, hereafter Mizuno.

Yara is applied here for the all the same reasons as set forth above and the examiner maintains the position as set forth above. However, Mizuno discloses that in order to achieve an active control of plasma using pulse duration of less than 1 ms (1000 ns). Mizuno discloses that such active control of the plasma structure in space and time allows for optimum reaction filed and controlling the ions and radicals life time. (page 656). Mizuno discloses using a high voltage in combination with pulses of 50-1000 ns duration without any plasma non-uniformity or arcing because voltage amplitude falls to zero before glow to arc transition (abstract).

Therefore, taking the references collectively, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Yara by providing high voltage pulses of 50 - 1000 ns as suggested by Mizuno to reap the benefits of providing active control. Please note that the test of obviousness is not an express

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suggestion of the claimed invention in any or all references, but rather what the references taken collectively would suggest to those of ordinary skill in the art presumed to be familiar with them (*In re Rosselet*, 146 USPQ 183).

Additionally, the claim would have been obvious because the technique for improving particular methods was part of the ordinary capabilities of a person of ordinary skill in the art, in view of the teaching of the technique for improvement in other situations. See *KSR Int'l Inc. v. Teleflex Inc.*, 127 S Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-

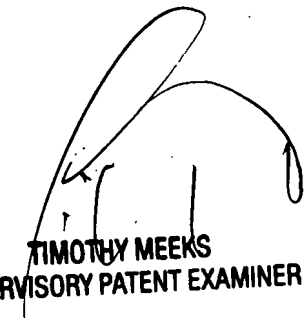
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2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Turocy/  
Patent Examiner  
Division 1792



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**